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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Neelakantan Sundaresan)
Serial No.: 09/502,818)
Filed: February 11, 2000)
Title: "System and Method for the Automatic Generation of Dynamic Search Abstracts")
Attorney Docket No.: ARC-00-0004-US1)

Examiner: Channavajjala, Srirama T.
Art Unit: 2177

Board of Patent Appeals and Interferences
Commissioner of Patents and Trademarks
Washington, D.C. 20231

APPEAL BRIEF

Dear Sir:

This appeal brief is submitted under 35 U.S.C. §134. This appeal is further to Appellants' Notice of Appeal filed herewith.

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(1) Real Party in Interest

The real party in interest is International Business Machines Corporation.

(2) Related Appeals / Interferences

No other appeals or interferences exist that relate to the present application or appeal.

(3) Status of Claims

Claims 1 - 22 are pending and remain in the application. In the Final Office Action of November 15, 2002, claims 1-22 have been indicated to be finally rejected as being unpatentable over Kravets et al., [hereafter Kravets], U.S. Patent No. 6,363,377 in view of Nasr et al., [hereafter Nasr], U.S. Patent No. 6,263,332.

(4) Status of Amendments

No amendments are outstanding.

(5) Summary of Invention

The abstract update system of the present invention improves Internet searching by automatically generating accurate and dynamic search abstracts. The system enables search engines to provide the most recent abstract information for a document that matches a search query, even if this document may have been crawled after the metadata was indexed. The dynamic abstracts are generated from the latest crawl metadata and link information stored in a link repository. As a result, the dynamic abstracts contain metadata based primarily on changes to a candidate page itself, and changes to what other sources provide about this candidate page. For example, even if a candidate page has not changed, new pages may point to it; some pages that used to point to the candidate page no longer do so; or existing pages that point to the candidate page change their annotations.

In one embodiment, the present system updates the abstract from the latest crawl link information rather than from the metadata stored in a metadata repository. This goal is achieved by generating the abstract in part from the latest crawl metadata and in part from the metadata stored in the link repository.

The updated abstract generated by the abstract update system may be significantly different from the abstract that would have otherwise been generated by traditional search engines from indexed metadata, and in most cases the user is presented with the most up to date abstract information. In a result page with multiple result entries, the present abstract update system enables the user to select and visit the hypertext URL page that corresponds to the result entry whose abstract seems closest to the user query.

In use, the web crawler crawls the web, and builds a metadata repository and a link repository. The crawler also keeps persistent information on the URLs and their crawl history in the link repository. An abstract engine generates an abstract for each web document from the metadata stored in the metadata database. An indexing engine periodically indexes the metadata and makes the indexed data available to the search engine.

When a user enters a search query, the indexing engine **does not present abstracts based on the metadata stored in the metadata repository as is traditionally done**, but rather inquires if the metadata repository or the link repository contains new information for each result entry in the result set. If new information exists, this new information is fed to the indexing engine so as to generate an updated or dynamic abstract, on a real time basis, for the result entry. **This dynamic abstract will contain more up to date information** than an abstract generated by traditional means.

(6) Issue Presented for Review

The issue for review is whether claims 1 - 22 are obvious in light of Kravets (U.S. Patent No. 6,363,377) in view of Nasr (U.S. Patent No. 6,263,332).

(7) Grouping of Claims

Claims 1 - 5 are grouped together and stand and fall together.

Claims 6 - 10 are grouped together and stand and fall together.

Claims 11 - 16 are grouped together and stand and fall together.

Claims 17 - 22 are grouped together and stand and fall together.

(8) Arguments

The issue under review is whether claims 1 - 22 are obvious in light of Kravets (U.S. Patent No. 6,363,377) in view of Nasr (U.S. Patent No. 6,263,332).

The office action states that as "to Claims 1,6,11, 17, Kravets teaches a system which including `automatically generating dynamic search abstracts' [see Abstract, col 2, line 47-52, line 53-56, fig 11], **Kravets teaches search engine** for refining, filtering and organizing search queries and search results as detailed in Abstract, especially fig 11 is the query results corresponds to abstracts, 'a crawler for crawling documents and acquiring metadata and link information from the documents' [col 1, line 43-53, col 10, line 12-34, line 66-67, col 11, line 1-6], Kravets specifically suggests several web engines such as Alta Vista, Excite, Web Crawler capable of sending programs for example robots or crawlers which automatically peruse the web and gather web pages, automatically indexing the collected web pages as detailed in col 1, line 43-53, also Kravets teaches meta data related to each document that represents conditions to be satisfied in order

for a document to be considered a match as detailed in table 2, col 10, line 23-26, `a metadata repository for storing the metadata acquired by the crawler' [col 1, line 47-55], Kravets suggests search engines store words of a documents corresponds to storing metadata acquired by web Crawler, `an indexing engine for periodically indexing the metadata and the link information' [col 9, line 10-22, col 6, line 46-63], Kravets specifically teaches Harvest search engine fig 8, element 816 which is configured to index all the pages, examiner interpreting index engine corresponds to Kravets's Harvest search engine as detailed in fig 8, also Kravets teaches generating dynamic set of URLs as detailed inn col 9, line 10-12, `a search engine for applying a search query to the metadata indexed by the indexing engine to generate a preliminary result set containing selected abstracts' [col 10, line 3-34, line 66-67, col 11, line 1-6, fig 4, fig 11 ], `search engine inquires if the link repository contains new link information about preliminary result set, and updates the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts' [col 11, line 33-41, col 12, line 6-23, line 42-52]. **It is however noted that Kravets does not specifically teach `an abstract engine'** although Kravets specifically suggests abstract query language that can easily be mapped to any particular engine's language [see col 10, line 13-14]. On the other hand, **Nasr teaches a system which including `an abstract engine'** [see fig 1 B, element 30, col 3, line 5-10].

It would have been obvious one of the ordinary skill in the art at the time of applicant's invention to incorporate the teachings of Nasr et al., into refining and improving search queries and organizing the results of a search query by different and overlapping criteria of Kravets because they both are directed to query processing, more specifically searching for information on the Web using search engine [see Kravets: Abstract, Nasr: Abstract]. One of ordinary skill in the art at the time of the invention would have been motivated to modify Kravets's fig 1A to incorporate the teachings of Nasr's Abstract Engine fig 1 B, element 30 **because**

that would have allowed users of Kravets's search query system to compile number of similar search quests in a number of differing languages such as detailed in fig 1B, elements 5a-5d, then abstract engine run the search to obtain search results, bringing the advantages of supporting any number of query languages, thus improving the processing of query and validate the results efficiently as suggested by Nasr [see col 2, line 22-24]." Emphasis added.

Applicant respectfully traverses this rejection and submits that claims 1 - 22 are not obvious in view of Kravets and Nasr, and are patentable thereover. In support of this position, Applicant submits the following arguments:

A. Legal Standards for Obviousness

The following are court opinions set the general standards in support of Applicant's position of non obviousness, with emphasis added for added clarity:

- "**Obviousness cannot be established** by combining the teachings of the prior art to produce the claimed invention, **absent some teaching or suggestion** supporting the combination." *In re Fine, 837 F.2d at 1075, 5 USPQ2d at 1598* (citing *ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).* **What a reference teaches** and whether it teaches toward or **away from the claimed invention** are questions of fact. See *Raytheon Co. v. Roper Corp., 724 F.2d 951, 960-61, 220 USPQ 592, 599-600 (Fed. Cir. 1983),* cert. denied, *469 U.S. 835, 83 L. Ed. 2d 69, 105 S. Ct. 127 (1984).* "

- "When a rejection depends on a combination of prior art references, there must be **some teaching, suggestion, or motivation** to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987)." Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention **where there is some teaching, suggestion, or motivation** to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See MPEP 2143.01; In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); In re Fine, 837 F.2d

1071, 5 USPQ2d 1596 (Fed. Cir. 1988); and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

- "With respect to core factual findings in a determination of patentability, however, the **Board cannot simply reach conclusions based on its own understanding or experience** -- or on its assessment of what would be basic knowledge or common sense. **Rather, the Board must point to some concrete evidence in the record** in support of these findings." See In re Zurko, 258 F.3d 1379 (Fed. Cir. 2001).

- "We have noted that **evidence of a suggestion, teaching, or motivation to combine** may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg. v. SGS Imports Intern., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), although "the suggestion more often comes from the teachings of the pertinent references," Rouffet, 149 F.3d at 1355, 47 USPQ2d at 1456. The range of sources available, however, does not diminish the requirement for actual evidence. That is, **the showing must be clear and particular**. See, e.g., C.R. Bard, 157 F.3d at 1352, 48 USPQ2d at 1232. **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."** E.g., McElmurry v. Arkansas Power & Light Co., 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993) ("Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact."); In re Sichert, 566 F.2d 1154, 1164, 196 USPQ 209, 217 (CCPA 1977)." See In re Dembiczak, 175 F. 3d 994 (Fed. Cir. 1999).

- "To prevent the use of hindsight based on the invention to defeat patentability of the invention, **this court requires the examiner to show a motivation to combine the references** that create the case of obviousness. In other words, **the examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references **for combination in the manner claimed**." See In re Rouffet, 149, F.3d 1350 (Fed. Cir. 1998).

- MPEP 2143.01-"The Prior Art Must Suggest The Desirability Of The Claimed Invention. There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (**The**

combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a prima facie case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. Al-Site Corp. v. VSI Int'l Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

- The mere fact that references can be combined or modified does not render the resultant combination obvious **unless the prior art also suggests the desirability of the combination**. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, **there must be a suggestion or motivation in the reference** to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

- If the **proposed modification would render the prior art invention being modified unsatisfactory** for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

B. Kravets et al. Patent

Kravets generally describes a tool to be used with a search engine for an information management system, that includes methods for refining, filtering, and organizing search queries and search results. A query tuner in the tool allows a user to automatically reformulate a query in order to find a reasonable number of matching documents from the search engine by selectively modifying individual search terms to be weaker or stronger and concurrently requesting a plurality of searches, each with a respectively different modified query. The tool also uses a dynamic filter which employs a dynamic set of record tokens to restrict the results of an arbitrary search query to selectively include or exclude records which correspond to the set of record tokens. (Refer to Abstract and column 2, lines 42-52, emphasis added)

"The system then begins to process each option individually. First, the system checks, in step 14, if the query tuner option has been selected. If the option has been selected then, in step 16, the query refinement process is initiated and the query is modified prior to the search being performed. The search is then performed as shown in step 18.

The system, in step 20, checks for the existence of additional processing options to be performed. If the system determines, in step 22, that the dynamic filter option has been selected, then the dynamic filter process is performed in step 24. The system, in step 26, determines if the result organizer option has been selected. If this option has been selected, then in step 28, the results organization process is performed. Next, after all options have been processed, the system displays the results in step 30. The system concludes with the user selection of the results as shown in step 32 and, optionally, the user saves the results of the query at step 34." (Refer to column 4, lines 6-23, emphasis added)

Claim 1 of Kravets patent provides further clarity to the meaning of the patented invention, and is reproduced herein for ease of reference, with emphasis added, as follows:

> "1. A method for generating search queries to be sent to a search engine for searching a information management system, comprising the steps of:
> a) receiving an initial search query;
> b) converting the initial search query to general boolean language;
> c) identifying a level in a respective hierarchy tree for each search query item in the initial search query;
> d) formulating additional related search queries by substituting items from the respective hierarchy tree for selected items in the query, the substituted item having a level in the hierarchy tree that is greater than or less than the level of the query item in the initial query; and
> e) forwarding the initial search query and the additional search queries in parallel to the search engine."

C. Nasr et al. Patent

Applicant agrees with the Examiner that Nasr describes an abstract engine.

D. Claim 1 and its Dependent Claims

Applicant will now present arguments in support of allowance of the independent claim 1 over the obviousness rejection in view of Kravets and Nasr. Claim 1 recites the following elements which, in combination with the other elements and limitations, are not described in Kravets and Nasr.

Applicant submits that the combination of Kravets and Nasr does not disclose the following features or limitations of claim 1 (emphasis added):

"1. A system for **automatically** generating dynamic **search abstracts**, comprising:

a crawler for crawling documents and acquiring metadata and link information from the documents;

a metadata repository for storing the metadata acquired by the crawler;

a link repository for storing link information acquired by the crawler;

an abstract engine for generating abstracts of the documents from the metadata;

an indexing engine for periodically indexing the metadata and the link information;

a search engine for applying a search query to the metadata indexed by the indexing engine, to generate a preliminary result set containing selected abstracts; and

wherein the **search engine inquires if the link repository contains new link information about the preliminary result set, and updates the**

selected abstracts based on the new link information, if any, to generate the dynamic search abstracts."

First Distinguishing Element/Limitation

The office action states that Kravets teaches a system that includes 'automatically generating dynamic search abstracts'. In support of this characterization, the office action specifically provides the following rejection grounds:

"[F]irstly, Kravets is directed to search engine for a refining, filtering and organizing search queries and search results [see Abstract]." Applicant respectfully submits that this rejection ground is insufficient to show that Kravets teaches "**automatically** generating **dynamic search abstracts"**, particularly in view of Examiner's statement that "**Kravets does not specifically teach an abstract engine"**. It is not clear how could a system that does not teach an abstract engine, teach: (1) the generation of **search abstracts**; (2) that are **dynamic**; and (3) that are generated **automatically**. Applicant respectfully submits that Kravets does not address the problems associated with search abstracts, and thus does not resolve these problems.

"[s]econdly, Kravets specifically teaches dynamic set of record tokens to restrict the results of a search query that in fact saves users time as well as organize and search queries and documents that satisfy the query [see col 2, line 53-61]." Applicant submits that this reasoning is also deficient in that it does not specifically show that Kravets teaches "**automatically** generating **dynamic search abstracts"** for the reasons addressed earlier in the previous paragraph. This reasoning is at best collateral to the substance of the issue, namely to show that Kravets teaches "**automatically** generating **dynamic search abstracts."**

"[t]hirdly, Kravets specifically teaches for example search engine by automatically and selectively modifying individual query terms in users' query as detailed in col 2, line 47-52, further it is noted that Kravets suggests for example search engines send out programs called robots, or crawlers, which automatically peruse the Web and gather Web pages they discover. The collected pages are automatically indexed and collected into a database. [see col 1, line 47-50], therefore, Kravets teaches said to be automatic. Applicant submits that this reasoning is equally deficient in that it does not specifically show that Kravets teaches "**automatically** generating **dynamic search abstracts"** for reasons addressed earlier in this section. This reasoning is at best collateral to the substantive issue at hand.

In addition, Applicant respectfully traverses the characterization of the Kravets method as **"automatically"** generating dynamic **search "abstracts"**, and submits the following arguments:

(1) As presented earlier, the user's interface is required to select the desired options, absence of which will not activate the system. As a result, the Kravets system cannot be said to be automatic.

(2) As stated by the Examiner, "**Kravets does not specifically teach `an abstract engine'** although Kravets specifically suggests abstract query language that can easily be mapped to any particular engine's language." As a result, the Kravets system, **by itself**, does **not** generate search abstracts.

The combination of Kravets and Nasr will now be discussed in view of the following Examiner's rejection ground: "examiner in the office action stated that Kravets does not specifically teach an abstract engine, although Kravets

specifically teaches automatically peruse the Web and gather web pages, in other words, collected web pages are automatically indexed into a database. On the other hand, Nasr specifically directed to abstract engine see fig 113, element 30, col 3, line 5-10. Examiner noted that applicant agree with examiner that prior art Nasr teaches abstract engine [see page 11, item C]. Therefore, one of ordinary skill in the art at the time of applicants invention would have been motivated to combine Kravert with Nasr because that would have allowed uses of Kravert's search query system **to compile number of similar search quests in a number of differing languages such as detailed in fig 1B, elements 5a-5d, then abstract engine run the search to obtain automatic search results".** Emphasis added.

Applicant admits that the use of abstract engines was known prior to the filing of the present application, and thus make no claim as to the abstract engines *per se*. Rather, Applicant is claiming the combination of the novel features recited in claim 1.

Applicant further submits that the office action did not provide a justifiable reason (as best understood by Applicant) for combining Kravets and Nasr, except for a general statement (made in hindsight) that such combination would be obvious to one of ordinary skill, in order "to compile number of similar search quests in a number of differing languages such as detailed in fig 1B, elements 5a-5d, then abstract engine run the search to obtain automatic search results."

Pursuant to the well recognized legal authorities above, since the examiner **has not shown reasons** so that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed, then the combination of Kravets and Nasr would be improper.

In addition, even if Kravets and Nasr (or other known abstract engines) were to be combined, the other important elements and limitations (to be discussed below) would still be lacking from the main reference, namely Kravets, and thus the combination design would still not offer the same features, nor include the same elements and limitations as recited in claim 1.

Second Distinguishing Element/Limitation

The office action states that Kravets acquires **link information**. In support of this characterization, the office action specifically provides the following rejection grounds:

"As to the above argument examiner disagree with the applicant because firstly Kravets teaches search engine that dynamically filtering, organizing documents [see Abstract]". Emphasis added. Applicant submits that the foregoing ground is untenable since it still does not clarify how "a search engine that dynamically filtering, organizing documents" discloses acquiring the link information as recited in claim 1.

The office action further states: "secondly, fig 5 is directed to URL lens, more specifically URL lens element 510 similar documents, in other words, URL lens finds other URLs that contain the terms or links as detailed in col 6, line 46-63]." Applicant also submits that the foregoing ground is untenable since it still does not explain how the URL lens acquires metadata and link information from the documents," and then use this information according to the remaining elements recited in claim 1. Applicant does not make any claim to the overall, abstract concept of acquiring metadata and link information from documents. Rather, Applicant is claiming the novel aspect of how to use this information once

acquired, in order to accomplish the desired goal, namely that the "**search engine inquires if the link repository contains new link information about the preliminary result set, and updates the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts**."

Since taking a single element out of context, and analyzing it in hindsight, is not a supportable rejection ground, Kravets cannot be said to teach acquiring metadata and link information from the documents for the purpose recited in claim 1. Applicant traverses this characterization of Kravets, and submits that **Kravets does not acquire link information**. **The absence of such teaching (i.e., link information) presents a significant departure** from the present invention, in that the link information is an element of claim 1, and is important for the proper functioning of the claimed system.

Third Distinguishing Element/Limitation

The office action also states that Kravets suggests " 'an indexing engine for periodically **indexing the metadata and the link information**' [col 9, line 10-22, col 6, line 46-63]."

Applicant respectfully traverses this rejection ground, and submits that **Kravets' indexing engine does not index link information**, since no such link information is acquired in the first place.

The office action also states that: "Kravets specifically teaches Harvest search engine fig 8, element 816 which is configured to index all the pages, examiner interpreting index engine corresponds to Kravets's Harvest search engine as detailed in fig 8, also Kravets teaches generating dynamic set of URLs as detailed in col 9, line 10-12, `a search engine for applying a search query to the metadata

indexed by the indexing engine to generate a preliminary result set containing selected abstracts' [col 10, line 3-34, line 66-67, col 11, line 1-6, fig 4, fig 11]".

Applicant traverses this rejection ground, and submits that the URLs generated by Kravets represent the pages visited "last week," and as result, these URLs are not the same as, or equivalent to "**new link information about the preliminary result set**" as recited in the present claim 1. **In essence, the URLs are not used by the Kravets system to generate the dynamic search abstracts.**

The office action also states that the Kravets "search engine inquires if the link repository contains new link information about preliminary result set, and updates the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts' [col 11, line 33-41, col 12, line 6-23, line 42-52]." Applicant has reproduced below the paragraphs in Kravets that are cited in the office action, and submits that these paragraphs do not seem to describe a "link repository" as recited in claim 1:

> "As with the meta-data, there is a hierarchy for the keywords. For example, as shown in FIG. 10(a), the top of the hierarchy is represented by cell 1010 and "keyword" corresponds to the most restrictive search query. Second on the hierarchy is cell 1012 corresponding to a broader search that can be done with the "all the English stemmings of keyword". Cell 1014 is at the bottom of the hierarchy and corresponds to the broadest search query related to "keyword or any of its synonyms".
>
> The formulation of related queries according the query hierarchies is illustrated based on a sample query Q=((title;cryptographic) BEFORE.sub.1 (title;protocols)) AND ((English language) AND (dated after Jan. 1, 1997)). The term item is used to refer to any atomic part of the query: a meta-datum, a keyword or a Boolean operator. For example, Q contains the following set of items {title, cryptographic, BEFORE.sub.1, title, protocols, AND, English language, AND, dated after Jan. 1, 1997}. For each query item t, define h(t) to be the node in the hierarchy forest corresponding to the item t. Related queries consists of a set of queries, each of which takes the original user query and modifies some items in it by either restricting or broadening them according to

the hierarchy forest. The act of broadening (restricting) a query item t corresponds to using a descendant (an ancestor) of h(t) in place of t within Q. For example, one set of related queries for our sample query Q is shown in Table 3.

The exemplary tree shown in FIG. 10(b) indicates that the search can be contracted or restricted by moving up the tree. In addition, it indicates that the search can be expanded by moving down the tree. For example, a search limited to x AND y according to cell 1040 can be restricted by moving up the tree and searching according to cell 1050 where the search is restricted to x NEARn y. In contrast, the search can be expanded by moving down the tree and searching for only x according to cell 1030 or searching for only y according to cell 1035. The search can be further expanded by searching for x OR y according to cell 1020."

To conclude, independent claim 1 is not obvious in view of Kravets and Nasr, and as a result, claim 1 and the claims dependent thereon are allowable, and such allowance is respectfully requested.

E. Claims 6, 11, and 17 and their Dependent Claims

Independent claims 6, 7, and 11 are allowable for similar reasons as presented earlier in favor of allowance of claim 1, since claims 6, 7, and 11 contain substantially similar elements and limitations as in claim 1. As a result, the independent claims 6, 7, and 11 and the claims dependent thereon are allowable, and such allowance is respectfully requested.

Respectfully submitted,

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APPENDIX A

CLAIMS ON APPEAL

1. A system for automatically generating dynamic search abstracts, comprising:

a crawler for crawling documents and acquiring metadata and link information from the documents;

a metadata repository for storing the metadata acquired by the crawler;

a link repository for storing link information acquired by the crawler;

an abstract engine for generating abstracts of the documents from the metadata;

an indexing engine for periodically indexing the metadata and the link information;

a search engine for applying a search query to the metadata indexed by the indexing engine, to generate a preliminary result set containing selected abstracts; and

wherein the search engine inquires if the link repository contains new link information about the preliminary result set, and updates the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts.

2. The system according to claim 1, further including a query transformer, which, when prompted by the search query, applies a query request to the metadata and the link information indexed by the indexing engine.

3. The system according to claim 1, further including a search results transformer that transforms the dynamic search abstracts into a user browsable form.

4. The system according to claim 1, wherein the link repository stores persistent link information and maintains a crawl history.

5. The system according to claim 1, wherein at least one of the selected abstracts includes information gathered from a source other than a candidate page associated with the selected abstract.

6. A computer program product for automatically generating dynamic search abstracts, comprising:

a crawler for crawling documents and acquiring metadata and link information from the documents;

a metadata repository for storing the metadata acquired by the crawler;

a link repository for storing link information acquired by the crawler;

an abstract engine for generating abstracts of the documents from the metadata;

an indexing engine for periodically indexing the metadata and the link information;

a search engine for applying a search query to the metadata indexed by the indexing engine, to generate a preliminary result set containing selected abstracts; and

wherein the search engine inquires if the link repository contains new link information about the preliminary result set, and updates the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts.

7. The computer program product according to claim 6, further including a query transformer, which, when prompted by the search query, applies a query request to the metadata and the link information indexed by the indexing engine.

8. The computer program product according to claim 6, further including a search results transformer that transforms the dynamic search abstracts into a user browsable form.

9. The computer program product according to claim 6, wherein the link repository stores persistent link information and maintains a crawl history.

10. The computer program product according to claim 6, wherein at least one of the selected abstracts includes information gathered from a source other than a candidate page associated with the selected abstract.

11. A method for automatically generating dynamic search abstracts, comprising:

crawling documents and acquiring metadata and link information from the documents;

storing the metadata acquired by the crawler in a metadata repository ;

storing link information acquired by the crawler in a link repository;

generating abstracts of the documents from the metadata;

periodically indexing the metadata and the link information;

applying a search query to the metadata to generate a preliminary result set containing selected abstracts; and

inquiring if the link repository contains new link information about the preliminary result set, and updating the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts.

12. The method according to claim 11, wherein updating a selected abstract includes gathering information from a source other than a candidate site associated with the selected abstract.

13. The method according to claim 11,wherein if the link repository does not contain new link information, presenting abstracts previously stored in the link repository.

14. The method according to claim 11, further including applying a query request to the metadata and the link information indexed by the indexing engine.

15. The method according to claim 11, further including transforming the dynamic search abstracts into a user browsable form.

16. The method according to claim 11, further including storing persistent link information and maintaining a crawl history in the link repository.

17. A computer program product having instruction codes for automatically generating dynamic search abstracts, comprising:

a first set of instruction codes that acquire documents and metadata and link information from the documents;

a metadata repository that store the metadata;

a link repository that store the link information;

a second set of instruction codes that generate abstracts of the documents from the metadata;

a third set of instruction codes that periodically index the metadata and the link information;

a fourth set of instruction codes that apply a search query to the metadata, to generate a preliminary result set containing selected abstracts; and

a fifth set of instruction codes that inquire if the link repository contains new link information about the preliminary result set, and that update the selected abstracts based on the new link information, if any, to generate the dynamic search abstracts.

18. The computer program product according to claim 17, wherein updating a selected abstract includes gathering information from a source other than a candidate site associated with the selected abstract.

19. The computer program product according to claim 17, wherein if the link repository does not contain new link information, presenting abstracts previously stored in the link repository.

20. The computer program product according to claim 17, further including applying a query request to the metadata and the link information indexed by the indexing engine.

21. The computer program product according to claim 17, further including transforming the dynamic search abstracts into a user browsable form.

22. The computer program product according to claim 17, further including storing persistent link information and maintaining a crawl history in the link repository.

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